UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IX

IN THE MATTER OF:	ADMINISTRATIVE ORDER FOR EARLY RESPONSE ACTIONS, REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
LEVIATHAN MINE ALPINE COUNTY, CALIFORNIA	U.S. EPA Region IX CERCLA
ATLANTIC RICHFIELD COMPANY, Respondent	Docket No. ~~2000-09-05~~ 2001-05 Proceeding under Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. § 9606(a).

I. INTRODUCTION AND JURISDICTION

1. This Administrative Order ("Order") directs Atlantic Richfield Company ("Respondent") to prepare and perform at the Leviathan Mine Site ("the Site") a phased Remedial Investigation/ Feasibility Study ("RI/FS") including Early Response Actions as described in the attached Statement of Work ("SOW") (Attachment 1), and to reimburse EPA for all costs incurred by EPA in connection with the phased RI/FS. Pursuant to this Order, Respondent will conduct the phased RI/FS described herein to abate an imminent and substantial endangerment to the public health, welfare or the environment that may be presented by the actual or threatened release of hazardous substances, at or from the Site.

2. This Order is issued pursuant to the authority vested in the President of the United States by section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. § 9606(a) as amended ("CERCLA"), and delegated to the Administrator of

the United States Environmental Protection Agency ("EPA") by Executive Order No. 12580, January 23, 1987, 52 Fed. Reg. 2923, as amended by Executive Order No. 13016, August 30, 1996, 61 Fed. Reg. 45871, further delegated to the EPA Regional Administrators by EPA Delegation Nos. 14-B and further redelegated to the Superfund Division Director by Regional Delegations dated September 29, 1997.

3. In issuing this Order, the objectives of EPA are: (a) to determine the nature and extent of contamination and any threat to the public health, welfare, or the environment caused by the release or threatened release of hazardous substances, pollutants or contaminants at or from the Site; (b) to determine and evaluate alternatives for remedial action to prevent, mitigate or otherwise respond to or remedy any release or threatened release of hazardous substances, pollutants or contaminants at or from the Site, by implementing Early Response Actions, as defined in Section VI of this Order, and conducting a feasibility study; and (c) to recover response and oversight costs incurred by the United States with respect to this Order.

4. The activities conducted under this Order are subject to approval by EPA and Respondent shall provide all appropriate necessary information for the RI/FS, and for a record of decision that is consistent with CERCLA and the National Contingency Plan, ("NCP"), 40 C.F.R. Part 300. The activities under this Order shall be conducted in compliance with all applicable EPA guidances, policies, and procedures.

II. FINDINGS OF FACT

5. The 656 acre Leviathan Mine property lies within a remote portion of northeastern Alpine County, California, on the eastern flank of the central Sierra Nevada, near the California-Nevada border, approximately 25 miles southeast of Lake Tahoe, and 6 miles east of Markleeville, California. Of the total property, approximately 253 acres are disturbed by mine related activities. With the exception of approximately 21 acres of disturbance on United States Forest Service lands, all disturbance is on the mine property, which is owned by the State of California. As identified on the Topaz Lake and Mt. Siegel U.S. Geological Survey ("USGS") quadrangle

sheets, the mine property is situated principally within Sections 15 and 22, Township 10 North, Range 21 East, although small portions of the workings extend into the southeastern and northwestern corners of the adjoining Sections 14 and 23, respectively.

6. Access to the mine property is dependent on the weather, but is provided by unpaved roads from State Highway 89 on the southeast and from U.S. Highway 395 south of Gardnerville, Nevada, on the northeast. The California-Nevada border lies approximately three miles northeast of the mine property. The mine property is isolated from approximately mid-November through late April due to impassable road conditions.

7. There are several sources of Acid Mine Drainage ("AMD") at the mine property which impact Leviathan Creek. When a release from the mine property occurs, it flows through the Leviathan Creek/ Bryant Creek watershed, which drains into the East Fork Carson River. The AMD released contains elevated concentrations of metals, most notably arsenic, and also includes iron, aluminum, chromium, cobalt, copper, nickel, and zinc. The low pH and high metals content of the AMD have eliminated most aquatic life in Leviathan and Bryant Creeks downstream of the mine. These releases originate in the state of California and, at times, may flow into the state of Nevada through Washoe Tribal lands into the East Fork Carson River, which serves as a major source of water supplies and a habitat for fish, including an historical habitat for the federally-listed threatened Lahontan cutthroat trout.

8. The Leviathan Mine pit is sparsely vegetated. Although there is some volunteer vegetation, most existing vegetation is due to localized revegetation efforts carried out by the Lahontan Regional Water Quality Control Board ("LRWQCB"). This remote mine has no potable water or power.

9. Anaconda Company, owned and operated the mine from 1954 until 1962. During this period, Anaconda Company extracted sulfur ore through open pit mining. Mining ceased at the mine property around 1962. In 1977, Anaconda Company merged into Atlantic Richfield

Company, the Respondent. In 1984, the State of California acquired the mine property to pursue cleanup and abatement of the water quality problems associated with historic mining. Jurisdiction over the mine property rests with the State Water Resources Control Board which, in turn, has delegated authority over the mine property to the LRWQCB. In an attempt to mitigate releases of AMD, the LRWQCB constructed 5 lined evaporation ponds on-site in 1983-1985, which collect AMD from on-site sources throughout the year. During the dry summer season, evaporation decreases the total volume of AMD and concentrates the contaminants within these ponds. The combined flow of AMD and direct precipitation (rain and snow) into the ponds exceeds evaporation losses from the ponds in most years, so that the ponds usually reach capacity (approximately 16 million gallons) and then overflow into Leviathan Creek, unless action is taken to create additional capacity in the ponds. Estimates of the overflow range from 3 to 9 million gallons per year.

10. On May 11, 2000 (65 Fed. Reg. 30482), pursuant to section 105 of CERCLA, 42 U.S.C. § 9605, EPA listed the Site on the National Priorities List, set forth at 40 CFR Part 300, Appendix B.

11. In May 1998, EPA issued to Respondent an Administrative Order on Consent for Removal Action ("AOC"). Under the AOC, Respondent agreed to remove liquids collected in the evaporation ponds, to collect specified information on site conditions, and to reimburse EPA, other agencies of the United States, and the Washoe Tribe of Nevada and California ("the Tribe") for all costs incurred on or after March 1, 1998, not inconsistent with the NCP. Respondent was not successful in removing sufficient quantities of AMD from the evaporation ponds.

12. EPA and Respondent modified the AOC on February 18, 2000. The modification to the AOC required Respondent to perform a Riparian Conservation Project, and it provided that Respondent's obligations under the 1998 AOC would be terminated 30 days after receipt of payment for response costs incurred between March 1, 1998 and the effective date of the modification to the AOC, which was February 18, 2000.

13. In the summer of 1999, the LRWQCB conducted a treatability study to evaluate a particular process for neutralizing the AMD held in the evaporation ponds. This process is referred to as biphasic neutralization. The treatability study demonstrated that biphasic neutralization could be used to treat the AMD to a level acceptable for discharge to Leviathan Creek, considering all of the exigencies of the situation prior to design of further response actions. Operation of this system in the summer of 1999 reduced the level of AMD in the ponds to a significant extent. Further LRWQCB activity in the spring of 2000 prevented overflow in 2000.

14. On July 29, 2000, EPA issued an Administrative Abatement Action under section 106(a) of CERCLA, 42 U.S.C. § 9606(a), to the LRWQCB, pursuant to which the LRWQCB treated the AMD in the evaporation ponds. The LRWQCB successfully treated sufficient quantities of AMD in the summer of 2000 so as to minimize the possibility of pond overflows in 2001. It is anticipated that inflows of AMD in 2001 will necessitate treatment by the LRWQCB in the summer of 2001 to avoid overflows from the evaporation ponds in 2002.

15. In addition to the contaminated water collected in the evaporation ponds, other sources of untreated AMD from the Leviathan Mine currently contribute year round to the contamination of the Bryant Creek watershed. The Channel Underdrain collects subsurface water from beneath a portion of the concrete Leviathan Creek diversion channel and discharges roughly 20 to 30 gallons per minute ("gpm") into Leviathan Creek. The Delta Seep area is a flow of approximately 10 gpm from the lowest portion of the mine waste rock in Leviathan Canyon, approximately 600 feet downstream from the end of the diversion channel. Aspen Seep is a series of flows totaling more than 10 gpm from low points of the waste rock in the Aspen Creek drainage. Flows from these sources may vary considerably from season to season. All of these sources discharge directly into Leviathan or Aspen Creeks without treatment, except for a relatively small portion of the Aspen Seep which is diverted into an experimental biological treatment system. Water quality measurements taken by LRWQCB indicate that these sources

are somewhat less acidic and less highly concentrated in arsenic and metals than water collected in the evaporation ponds.

III. CONCLUSIONS OF LAW AND DETERMINATIONS

16. The Leviathan Mine Site is a "facility" as defined in section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

17. Respondent is a "person" as defined in section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

18. Respondent or its predecessor owned and operated the Leviathan Mine during a period of time when hazardous substances were disposed there, and is therefore a "liable" party as defined in section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and is subject to this Order under section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

19. The substances listed in Paragraph 7 of this Order are found at the Site and are "hazardous substances" as defined in section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

20. The hazardous substances contained in the evaporation ponds threaten to be released from the Site into the surface water in the future. Furthermore, hazardous substances from the other sources described in Paragraph 7 are being released from the Site into the surface water.

21. The conditions at the Site described above constitute an actual or threatened "release" as defined in section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

22. The actual or threatened release of one or more hazardous substances from the facility may present an imminent and substantial endangerment to the public health or welfare or the environment.

23. The phased RI/FS required by this Order is necessary to protect the public health, welfare, and the environment, and is consistent with the NCP and CERCLA.

24. The contamination and endangerment at this Site constitute an indivisible injury. The actions required by this Order are necessary to protect the public health, welfare, and the environment.

IV. NOTICE TO THE STATE

25. On November 17, prior to issuing this Order, EPA notified the State of California, LRWQCB, that EPA would be issuing this Order.

V. ORDER

26. Based on the foregoing, Respondent is hereby ordered to comply with the following provisions, including but not limited to all attachments to this Order, all documents incorporated by reference into this Order, and all schedules and deadlines in this Order, attached to this Order, or incorporated by reference into this Order.

VI. DEFINITIONS

27. Unless otherwise expressly provided herein, terms used in this Order which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in the statute or its implementing regulations. Whenever terms listed below are used in this Order or in the documents attached to this Order or incorporated by reference into this Order, the following definitions shall apply:

a. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601 et seq.

b. "Day" shall mean a calendar day unless expressly stated to be a working day. "Working day" shall mean a day other than a Saturday, Sunday, or federal holiday. In

computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or federal holiday, the period shall run until the end of the next working day.

c. "Early Response Action" shall mean those activities to investigate and respond to the known risks from the untreated source areas, such as a Time Critical Removal Action, Non-Time Critical Removal Action, or Interim Remedial Action, to be undertaken by Respondent to implement the final plans and specifications submitted by Respondent pursuant to the SOW and approved by EPA.

d. "EPA" shall mean the United States Environmental Protection Agency.

e. "National Contingency Plan" or "NCP" shall mean the National Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, including any amendments thereto.

f. "Paragraph" shall mean a portion of this Order identified by an arabic numeral.

g. "Response Costs" shall mean all costs, including direct costs, indirect costs, and accrued interest incurred by the United States to perform or support response actions at the Site. Response costs include but are not limited to the costs of overseeing the Work, such as the costs of reviewing or developing plans, reports and other items pursuant to this Order and costs associated with verifying the Work.

h. "Statement of Work" or "SOW" shall mean the statement of work for implementation of the phased RI/FS as set forth in Attachment 1 to this Order. The SOW is incorporated into this Order and is an enforceable part of this Order.

i. "Section" shall mean a portion of this Order identified by a roman numeral and includes one or more Paragraphs.

j. "Site" shall mean the Leviathan Mine Superfund site, as described in the NPL listing.

k. The "State" shall mean the State of California, Lahontan Regional Water Quality Control Board.

l. "Tribe" shall mean the Washoe Tribe of Nevada and California.

m. "United States" shall mean the United States of America.

n. "Work" shall mean all activities Respondent is required to perform under this Order, including any activities described in the SOW.

VII. NOTICE OF INTENT TO COMPLY

28. Respondent shall provide, not later than 10 days after the effective date of this Order, written notice to EPA's Remedial Project Manager ("RPM") stating whether it will comply with the terms of this Order. If Respondent does not unequivocally commit to perform the Work as provided by this Order, it shall be deemed to have violated this Order and to have failed or refused to comply with this Order. Respondent's written notice shall describe, using facts that exist on or prior to the effective date of this Order, any "sufficient cause" defenses asserted by Respondent under sections 106(b) and 107(c)(3) of CERCLA. The absence of a response by EPA to the notice required by this Paragraph shall not be deemed to be acceptance of Respondent's assertions. It is anticipated that ARCO Environmental Remediation, L.L.C. ("AERL") will act as Respondent's implementing agent.

VIII. PARTIES BOUND

29. This Order shall apply to and be binding upon Respondent and upon its directors, officers, employees, agents, successors, and assigns. Respondent is jointly and severally responsible for carrying out all activities required by this Order. No change in the ownership,

corporate status, or other control of any of the entities referenced in this Paragraph shall alter any of Respondent's responsibilities under this Order.

30. Respondent shall provide a copy of this Order to any prospective owners or successors before a controlling interest in Respondent's assets, property rights, or stock are transferred to the prospective owner or successor. Respondent shall provide a copy of this Order to each contractor, sub-contractor, laboratory, or consultant retained to perform any Work under this Order, within five days after the effective date of this Order or on the date such services are retained, whichever date occurs later. Respondent shall also provide a copy of this Order to each person representing any Respondent with respect to the Site or the Work and shall condition all contracts and subcontracts entered into hereunder upon performance of the Work in conformity with the terms of this Order. With regard to the activities undertaken pursuant to this Order, each contractor and subcontractor shall be deemed to be related by contract to Respondent within the meaning of section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3). Notwithstanding the terms of any contract, Respondent is responsible for compliance with this Order and for ensuring that its contractors, subcontractors and agents comply with this Order, and perform any Work in accordance with this Order.

IX. WORK TO BE PERFORMED

31. Respondent shall cooperate with EPA in providing information regarding the Work to the public. As requested by EPA, Respondent shall participate in the preparation of such information for distribution to the public and in public meetings which may be held or sponsored by EPA to explain activities at or relating to the Site.

32. All aspects of the Work to be performed by Respondent pursuant to this Order shall be under the direction and supervision of a qualified project manager the selection of which shall be subject to approval by EPA. Within 10 days after the effective date of this Order, Respondent shall notify EPA in writing of the name and qualifications of the project manager, including

primary support entities and staff, proposed to be used in carrying out Work under this Order. If at any time Respondent proposes to use a different project manager, Respondent shall notify EPA and shall obtain approval from EPA before the new project manager performs any Work under this Order.

33. EPA will review Respondent's selection of a project manager according to the terms of this Paragraph and Section XVI of this Order. If EPA disapproves of the selection of the project manager, Respondent shall submit to EPA within 30 days after receipt of EPA's disapproval of the project manager previously selected, a list of project managers, including primary support entities and staff, that would be acceptable to Respondent. EPA will thereafter provide written notice to Respondent of the names of the project managers that are acceptable to EPA. Respondent may then select any approved project manager from that list and shall notify EPA of the name of the project manager selected within 21 days of EPA's designation of approved project managers.

34. Respondent shall conduct activities and submit deliverables as provided by SOW. All such work shall be conducted in accordance with CERCLA, the NCP, and EPA guidance including, but not limited to, the "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA"(OSWER Directive # 9355.3-01), "Guidance for Data Usability in Risk Assessment" (OSWER Directive #9285.7-05) and guidances referenced therein, and guidances referenced in the SOW, as may be amended or modified by EPA. The general activities that Respondent is required to perform are identified below in the list of deliverables. The tasks that Respondent must perform are described more fully in the SOW and guidances. The activities and deliverables identified below shall be developed as provided in the SOW, and shall be submitted to EPA as provided. All work performed under this Order shall be in accordance with the schedules herein, and in full accordance with the standards, specifications, and other requirements of the SOW, as initially approved or modified by EPA, and as may be amended or modified by EPA from time to time.

35. Respondent shall provide EPA with the following deliverables:

A. Within 30 days of the effective date of this Order, Respondent shall submit to EPA the Site Management Plan ("SMP") as described in the SOW. If EPA disapproves of or requires revisions to the SMP, in whole or in part, Respondent shall amend and submit to EPA a revised SMP which is responsive to the directions in all EPA comments, within 15 days of receiving EPA's comments.

B. Within 30 days of receiving notice from EPA that it has approved the SMP, Respondent shall submit to EPA a Work Plan for the First Phase RI/FS, as described in the SOW. If EPA disapproves of or requires revisions to the Work Plan for the First Phase RI/FS, in whole or in part, Respondent shall amend and submit to EPA a revised Work Plan for the First Phase RI/FS which is responsive to the directions in all EPA comments, within 15 days of receiving EPA's comments.

C. Within 45 days of receiving notice from EPA that it has approved the SMP, Respondent shall submit to EPA a Work Plan for implementation of Early Response Actions, as described in the SOW. If EPA disapproves of or requires revisions to the Work Plan for implementation of Early Response Actions, in whole or in part, Respondent shall amend and submit to EPA a revised Work Plan for implementation of Early Response Actions which is responsive to the directions in all EPA comments, within 15 days of receiving EPA's comments.

D. Following implementation of Early Response Actions at the Site, and within 90 days of receiving notice from EPA, Respondent shall submit to EPA a Work Plan for Long-term Response RI/FS, as described in the SOW. It is anticipated that implementation of Early Response Actions will take place during 2001 and the summer of 2002, so that a Work Plan for Long-term Response RI/FS will be needed in the second half of 2002. If EPA disapproves of or requires revisions to the Work Plan for Long-term Response RI/FS, in whole or in part, Respondent shall amend and submit to EPA a revised Work Plan for Long-term Response RI/FS

which is responsive to the directions in all EPA comments, within 30 days of receiving EPA's comments.

36. In the event that Respondent amends or revises a report, plan or other submittal upon receipt of EPA comments, if EPA subsequently disapproves of the revised submittal, or if subsequent submittals do not fully reflect EPA's directions for changes, EPA retains the right to seek statutory penalties; perform its own studies, complete the Work (or any portion of the Work under CERCLA and the NCP), and seek reimbursement from Respondent for its costs; and/or seek any other appropriate relief.

37. Respondent shall perform each approved work plan according to the schedule provided therein.

38. In the event that EPA takes over some of the tasks, but not the preparation of the Long-term Response RI/FS, Respondent shall incorporate and integrate information supplied by EPA into the final Long-term Response RI/FS report.

39. Neither failure of EPA to expressly approve or disapprove of Respondent's submissions within any time period, nor the absence of comments, shall be construed as approval by EPA. Whether or not EPA gives express approval for Respondent's deliverables, Respondent is responsible for preparing deliverables acceptable to EPA.

40. Respondent shall, prior to any off-site shipment of hazardous substances from the site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving state and to EPA's RPM of such shipment of hazardous substances. However, the notification of shipments shall not apply to any such off-site shipments when the total volume of such shipments will not exceed 10 cubic yards.

(a) The notification shall be in writing, and shall include the following information, where available: (1) the name and location of the facility to which the hazardous substances are to be

shipped; (2) the type and quantity of the hazardous substances to be shipped; (3) the expected schedule for the shipment of the hazardous substances; and (4) the method of transportation. Respondent shall notify the receiving state of major changes in the shipment plan, such as a decision to ship the hazardous substances to another facility within the same state, or to a facility in another state.

(b) The identity of the receiving facility and state will be determined by Respondent following the award of the contract for any phase of the Work. Respondent shall provide all relevant information, including information under the categories noted in Subparagraph (a) above, on the off-site shipments, as soon as practical after the award of the contract and before the hazardous substances are actually shipped.

X. MODIFICATION OF THE WORK PLANS

41. In the event of conditions posing an immediate threat to human health or welfare or the environment, Respondent shall notify EPA and the state immediately. In the event of unanticipated or changed circumstances at the site, Respondent shall notify the EPA RPM by telephone within 24 hours of discovery of the unanticipated or changed circumstances. In addition to the authorities in the NCP, in the event that EPA determines that the immediate threat or the unanticipated or changed circumstances warrant changes in a work plan, EPA shall modify or amend the work plan in writing accordingly. Respondent shall perform each approved work plan as modified or amended.

42. EPA may determine that in addition to tasks defined in an initially approved work plan, other additional work may be necessary to accomplish the objectives of the Early Response Actions and phased RI/FS as set forth in the SOW. EPA may require that Respondent perform these response actions in addition to those required by the initially approved SOW, including any approved modifications, if it determines that such actions are necessary for completion of any Early Response Action or the RI/FS. Respondent shall confirm its willingness to perform the additional work in writing to EPA within 15 days of receipt of the EPA. Respondent shall implement the additional tasks which EPA determines are necessary. The additional work shall

be completed according to the standards, specifications, and schedule set forth or approved by EPA in a written modification to the work plan or written work plan supplement. EPA reserves the right to conduct the work itself at any point, to seek reimbursement from Respondent, and/or to seek any other appropriate relief.

XI. FINAL REPORTS, PROPOSED PLANS, RECORD OF DECISION AND ADMINISTRATIVE RECORD

43. EPA retains the responsibility for the release to the public of the report on any phase of the phased RI/FS. EPA retains responsibility for the preparation and release to the public of the proposed plan and record of decision in accordance with CERCLA and the NCP.

44. EPA shall provide Respondent with the final report on any phase of the phased RI/FS as well as any record of decision.

45. EPA will determine the contents of the administrative record file for selection of any response action. Respondent must submit to EPA documents developed during the course of the phased RI/FS upon which selection of a response action may be based. Respondent shall provide copies of plans, task memoranda for further action, quality assurance memoranda and audits, raw data, field notes, laboratory analytical reports and other reports. Respondent must additionally submit any previous studies conducted under state, local or other federal authorities relating to selection of the response action, and all communications between Respondent and state, local or other federal authorities concerning selection of the response action. EPA may require Respondent to establish a community information repository at or near the Site, to house one copy of the administrative record.

XII. PROGRESS REPORTS AND MEETINGS

46. Respondent shall make presentations at, and participate in, meetings at the request of EPA during the initiation, conduct, and completion of the RI/FS. In addition to discussion of the

technical aspects of the RI/FS, topics will include anticipated problems or new issues. Meetings will be scheduled at EPA's discretion.

47. In addition to the deliverables set forth in this Order, Respondent shall provide to EPA monthly progress reports by the 10th day of the following month. At a minimum, with respect to the preceding month, these progress reports shall (1) describe the actions which have been taken to comply with this Order during that month, (2) include all results of sampling and tests and all other data received by Respondent, (3) describe work planned for the next two months with schedules relating such work to the overall project schedule for the Work and (4) describe all problems encountered and any anticipated problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays.

XIII. SAMPLING, ACCESS, AND DATA AVAILABILITY/ADMISSIBILITY

48. All results of sampling, tests, modeling or other data (including raw data) generated by Respondent, or on Respondent's behalf, during implementation of this Order, shall be submitted to EPA in the subsequent monthly progress report as described in Section XII of this Order.

49. Respondent will verbally notify EPA at least 15 days prior to conducting significant field events as described in the SOW, work plan or sampling and analysis plan. At EPA's verbal or written request, or the request of EPA's contractor, Respondent shall allow split or duplicate samples to be taken by EPA (and its authorized representatives) of any samples collected by Respondent in implementing this Order.

50. Respondent may assert a claim of business confidentiality covering part or all of the information submitted to EPA pursuant to the terms of this Order under 40 C.F.R. Section 2.20, provided such claim is allowed by section 104(e)(7) of CERCLA, 42 U.S.C. Section 9604(e)(7). This claim shall be asserted in the manner described by 40 C.F.R. Section 2.203(b) and substantiated at the time the claim is made. Information determined to be confidential by EPA will be given the protection specified in 40 C.F.R. Part 2. If no such claim accompanies the

information when it is submitted to EPA, it may be made available to the public by EPA or the state without further notice to Respondent. Respondent agrees not to assert confidentiality claims with respect to any data related to site conditions, sampling, or monitoring.

51. Respondent will obtain, or use its best efforts to obtain, site access agreements with owners of property where the Work must be performed. Such agreements shall provide access for EPA, its contractors and oversight officials, the state and its contractors, and Respondent or its authorized representatives, and such agreements shall specify that Respondent is not EPA's representative with respect to liability associated with site activities. Copies of such agreements shall be provided to EPA prior to Respondent's initiation of field activities. If access agreements are not obtained within 60 days after the effective date of this Order, Respondent shall immediately notify EPA of its failure to obtain access. EPA may obtain access for Respondent, perform those tasks or activities with EPA contractors, or terminate the Order in the event that Respondent cannot obtain access agreements. In the event that EPA performs those tasks or activities with EPA contractors and does not terminate the Order, Respondent shall perform all other activities not requiring access to that site, and shall reimburse EPA for all costs incurred in performing such activities. Respondent additionally shall integrate the results of any such tasks undertaken by EPA into its reports and deliverables.

XIV. RECORD PRESERVATION

52. Respondent shall preserve all records and documents in its possession that relate in any way to the site during the conduct of this Order and for a minimum of 10 years after commencement of construction of any response action. Respondent shall acquire and retain copies of all documents that relate to the site and are in the possession of its employees, agents, accountants, contractors, or attorneys. After this 10 year period, Respondent shall notify EPA at least 90 days before the documents are scheduled to be destroyed. If EPA requests that the documents be saved, Respondent shall, at no cost to EPA, give EPA the documents or copies of the documents.

XV. ENDANGERMENT AND EMERGENCY RESPONSE

53. In the event of any action or occurrence during the performance of the Work which causes or threatens to cause a release of a hazardous substance or which may present an immediate threat to public health or welfare or the environment, Respondent shall immediately take all appropriate action to prevent, abate, or minimize the threat, and shall immediately notify EPA's RPM. If the RPM is unavailable Respondent shall notify the EPA Office of Emergency Response, Region IX. Respondent shall take such action in consultation with EPA's RPM and in accordance with all applicable provisions of this Order, including but not limited to the Health and Safety Plan and the Contingency Plan. In the event that Respondent fails to take appropriate response action as required by this Section, and EPA takes that action instead, Respondent shall reimburse EPA for all costs of the response action not inconsistent with the NCP. Respondent shall pay the response costs in the manner described in Section XXVI of this Order, within 30 days of Respondent's receipt from EPA of a demand for payment and a summary of the costs incurred.

54. Nothing in the preceding Paragraph shall be deemed to limit any authority of the United States to take, direct, or order all appropriate action to protect human health and the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances on, at, or from the Site.

XVI. EPA REVIEW OF SUBMISSIONS

55. After review of any deliverable, plan, report or other item which is required to be submitted for review and approval pursuant to this Order, EPA may: (a) approve the submission; (b) approve the submission with modifications; (c) disapprove the submission and direct Respondent to re-submit the document after incorporating EPA's comments; or (d) disapprove the submission and assume responsibility for performing all or any part of the response action. As used in this Order, the terms "approval by EPA," "EPA approval," or a similar term means the action described in Subparagraphs (a) or (b) of this Paragraph.

56. In the event of approval or approval with modifications by EPA, Respondent shall proceed to take any action required by the plan, report, or other item, as approved or modified by EPA.

57. Upon receipt of a notice of disapproval or a request for a modification, Respondent shall, within 15 days or such longer time as specified by EPA or in Paragraph 35 (D) of this Order, correct the deficiencies and resubmit the plan, report, or other item for approval. Notwithstanding the notice of disapproval, or approval with modifications, Respondent shall proceed, at the direction of EPA, to take any action required by any non-deficient portion of the submission.

58. If any submission is disapproved by EPA pursuant to Paragraph 55 (d) of this Order, Respondent shall be deemed to be in violation of this Order.

XVII. COMPLIANCE WITH APPLICABLE LAWS

59. All activities by Respondent pursuant to this Order shall be performed in accordance with the requirements of all federal and state laws and regulations. EPA has determined that the activities contemplated by this Order are consistent with the NCP.

60. Except as provided in section 121(e) of CERCLA and the NCP, no permit shall be required for any portion of the Work conducted entirely on-Site. Where any portion of the Work requires a federal or state permit or approval, Respondent shall submit timely applications and take all other actions necessary to obtain and to comply with all such permits or approvals.

61. This Order is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

XVIII. REMEDIAL PROJECT MANAGER

62. All communications, whether written or oral, from Respondent to EPA shall be directed to EPA's RPM or Alternate RPM. Respondent shall submit to EPA three copies of all documents, including plans, reports, and other correspondence, which are developed pursuant to this Order, and shall send these documents by certified mail, return receipt requested or overnight delivery. Documents which Respondent has in electronic form shall also be sent by electronic mail.

EPA's RPM is:

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EPA's Alternate RPM is:

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(415) 744-2221
moore.kathi@epa.gov

63. EPA has the unreviewable right to change its RPM or Alternate RPM. If EPA changes its RPM or Alternate RPM, EPA will inform Respondent in writing of the name, address, and telephone number of the new RPM or Alternate RPM.

64. EPA's RPM and Alternate RPM shall have the authority lawfully vested in a RPM and an On-Scene Coordinator ("OSC") by the National Contingency Plan, 40 C.F.R. Part 300. EPA's RPM or Alternate RPM shall have authority, consistent with the National Contingency Plan, to halt any work required by this Order, and to take any necessary response action.

65. Within 10 days after the effective date of this Order, Respondent shall designate a Project Coordinator and shall submit the name, address, and telephone number of the Project Coordinator to EPA for review and approval. Respondent's Project Coordinator shall be responsible for overseeing Respondent's implementation of this Order. If Respondent wishes to change his/her Project Coordinator, Respondent shall provide written notice to EPA, 5 days prior to changing the Project Coordinator, of the name and qualifications of the new Project Coordinator. Respondent's selection of a Project Coordinator shall be subject to EPA approval.

XIX. DELAY IN PERFORMANCE

66. Any delay in performance of this Order that, in EPA's judgment, is properly justified by Respondent under the terms of this Section shall not be considered a violation of this Order. Any delay in performance of this Order shall not affect Respondent's obligations to fully perform all obligations under the terms and conditions of this Order.

67. Respondent shall notify EPA of any delay or anticipated delay in performing any requirement of this Order. Such notification shall be made by telephone to EPA's RPM or Alternate RPM within 48 hours after Respondent first knew or should have known that a delay might occur. Respondent shall adopt all reasonable measures to avoid or minimize any such delay. Within 5 business days after notifying EPA by telephone, Respondent shall provide written notification fully describing the nature of the delay, any justification for delay, any reason why Respondent should not be held strictly accountable for failing to comply with any relevant requirements of this Order, the measures planned and taken to minimize the delay, and a schedule for implementing the measures that will be taken to mitigate the effect of the delay. EPA may, in its sole and unreviewable discretion, grant an extension of any schedule for good cause shown. Increased costs or expenses associated with implementation of the activities called for in this Order are not a justification for any delay in performance. EPA may find a justification for delay in Respondent's performance where either: (a) Respondent has complied with the requirements of this Section and the requirements of Paragraph 51 of this Order, and a property owner has denied Respondent access with the result that Respondent's performance of a requirement of this Order

has been delayed; or (b) Respondent has complied with the requirements of this Section and the requirements of Paragraph 60 of this Order, and an authority with jurisdiction to issue a permit has denied or delayed issuance of a required permit with the result that Respondent's performance of a requirement of this Order has been delayed.

XX. ASSURANCE OF ABILITY TO COMPLETE WORK

68. Within 30 days after approval of any Work Plan for any response action, Respondent shall demonstrate its ability to complete the Work specified by the Work Plan and to pay all claims that arise from the performance of such Work by obtaining and presenting to EPA within 30 days after approval of the Work Plan one of the following: (1) a performance bond; (2) a letter of credit; (3) a guarantee by a third party; or (4) internal financial information to allow EPA to determine that Respondent has sufficient assets available to perform the Work. Respondent shall demonstrate financial assurance in an amount no less than the estimate of cost for the response action described in the Work Plan. If Respondent seeks to demonstrate ability to complete the response action by means of internal financial information, or by guarantee of a third party, it shall re-submit such information annually. If EPA determines that such financial information is inadequate, Respondent shall, within 30 days after receipt of EPA's notice of determination, obtain and present to EPA for approval one of the other three forms of financial assurance listed above.

69. At least 7 days prior to commencing any Work at the Site pursuant to this Order, Respondent shall submit to EPA a certification that Respondent or its contractors and subcontractors have adequate insurance coverage or have indemnification for liabilities for injuries or damages to persons or property which may result from the activities to be conducted by or on behalf of Respondent pursuant to this Order. Respondent shall ensure that such insurance or indemnification is maintained for the duration of the Work required by this Order.

XXI. REIMBURSEMENT OF RESPONSE COSTS

70. Respondent shall reimburse EPA, upon written demand, for all response costs, not inconsistent with the NCP, incurred by it. Response costs are all costs including, but not limited to, direct and indirect costs and interest, that the EPA incurs in overseeing Respondent's implementation of the requirements of this Order, including development of this Order, reviewing or developing plans, reports and other items pursuant to this Order, verifying the Work, or otherwise implementing, overseeing, or enforcing this Order or in performing any response action which Respondent fails to perform in compliance with this Order. Response costs shall also include all costs, including direct and indirect costs, paid or incurred by EPA in connection with the Site between February 18, 2000 and the effective date of this Order.

71. On a periodic basis, EPA may submit to Respondent bills for response costs that include an itemized Cost Summary.

72. Respondent shall, within 30 days of receipt of each bill, remit a certified or cashier's check for the amount of those costs. Interest shall accrue from the later of the date that payment of a specified amount is demanded in writing or the date of the expenditure. The interest rate is the rate established by the Department of the Treasury pursuant to 31 U.S.C. § 3717 and 4 C.F.R. § 102.13.

73. For payments described in this Section, Respondent shall remit a check made payable to the Hazardous Substances Superfund and shall include the name of the Site, the Site identification number, the account number and the title of this Order. Respondent shall send such checks to:

U.S. Environmental Protection Agency
Superfund Accounting
P.O. Box 3608
Pittsburgh, PA 15251

Attn: Catherine Shen

74. Respondent shall simultaneously transmit a copy of the check to the Deputy Director, Superfund Division, U.S. EPA Region 9. Payments shall be designated as "Response Costs - Leviathan Mine Site" and shall reference the payor's name and address, the EPA site identification number 091A, and the docket number of this Order.

75. In the event that the payments for response costs are not made as required above, Respondent shall pay interest on the unpaid balance. Interest is established at the rate specified in section 107(a) of CERCLA. Interest shall accrue at the rate specified through the date of the payment. Payments of interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondent's failure to make timely payments under this Section.

76. Respondent may dispute all or part of a bill for response costs submitted under this Order, if Respondent alleges that EPA, another federal agency, or the Tribe has made an accounting error, or if Respondent alleges that a cost item is inconsistent with the NCP. If any dispute over costs is resolved before payment is due, the amount due will be adjusted as necessary. If a dispute with EPA is not resolved before payment is due, Respondent shall pay the full amount of the uncontested costs into the Hazardous Substance Fund as specified above on or before the due date. Respondent shall pay to the prevailing party the amounts upon which it prevails plus interest within 15 days after the dispute is resolved.

XXII. UNITED STATES NOT LIABLE

77. The United States, by issuance of this Order, assumes no liability for any injuries or damages to persons or property resulting from acts or omissions by Respondent, or its directors, officers, employees, agents, representatives, successors, assigns, contractors, or consultants in carrying out any action or activity pursuant to this Order. Neither EPA nor the United States may be deemed to be a party to any contract entered into by Respondent or its directors, officers, employees, agents, successors, assigns, contractors, or consultants in carrying out any action or activity pursuant to this Order.

XXIII. ENFORCEMENT AND RESERVATIONS

78. EPA reserves the right to bring an action against Respondent under section 107 of CERCLA, 42 U.S.C. § 9607, for recovery of any response costs incurred by the United States and not reimbursed by Respondent. This reservation shall include but not be limited to past costs, direct costs, indirect costs, the costs of oversight, the costs of compiling the cost documentation to support oversight cost demand, as well as accrued interest as provided in section 107(a) of CERCLA.

79. Notwithstanding any other provision of this Order, at any time during the response action, EPA may perform its own studies, complete the response action (or any portion of the response action) as provided in CERCLA and the NCP, and seek reimbursement from Respondent for its costs, or seek any other appropriate relief.

80. Nothing in this Order shall preclude EPA from taking any additional enforcement actions, including modification of this Order or issuance of additional Orders, and/or additional remedial or removal actions as EPA may deem necessary, or from requiring Respondent in the future to perform additional activities pursuant to CERCLA, 42 U.S.C. § 9606(a), et seq., or any other applicable law. Respondent shall be liable under CERCLA section 107(a), 42 U.S.C. § 9607(a), for the costs of any such additional actions.

81. Notwithstanding any provision of this Order, the United States hereby retains all of its information gathering, inspection and enforcement authorities and rights under CERCLA, RCRA and any other applicable statutes or regulations.

82. Respondent shall be subject to civil penalties under section 106(b) of CERCLA, 42 U.S.C. § 9606(b), of not more than $27,500 for each day in which Respondent willfully violates, or fails or refuses to comply with this Order without sufficient cause. In addition, failure to properly provide response action under this Order, or any portion hereof, without sufficient cause, may

result in liability under section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3), for punitive damages in an amount at least equal to, and not more than three times the amount of any costs incurred by the Fund as a result of such failure to take proper action.

83. Nothing in this Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person for any liability it may have arising out of or relating in any way to the Site.

84. If a court issues an order that invalidates any provision of this Order or finds that Respondent has sufficient cause not to comply with one or more provisions of this Order, Respondent shall remain bound to comply with all provisions of this Order not invalidated by the court's order.

XXIV. ADMINISTRATIVE RECORD

85. Upon request by EPA, Respondent must submit to EPA all documents related to the selection of the response action for possible inclusion in the administrative record file.

XXV. EFFECTIVE DATE AND COMPUTATION OF TIME

86. This Order shall be effective on the day it is signed by the Superfund Division Director. All times for performance of ordered activities shall be calculated from this effective date.

XXVI. OPPORTUNITY TO CONFER

87. Respondent may, within 10 days after the date this Order is signed, request a conference with EPA's Superfund Division Branch Chief to discuss this Order. If requested, the conference shall occur on December 14, 2000 at 75 Hawthorne Street, San Francisco, California.

88. The purpose and scope of the conference shall be limited to issues involving the implementation of the response actions required by this Order and the extent to which Respondent intends to comply with this Order. This conference is not an evidentiary hearing, and does not

constitute a proceeding to challenge this Order. It does not give Respondent a right to seek review of this Order, or to seek resolution of potential liability, and no official stenographic record of the conference will be made. At any conference held pursuant to Respondent's request, Respondent may appear in person or by an attorney or other representative.

89. Requests for a conference must be by telephone followed by written confirmation mailed that day to the RPM.

So Ordered, this 22 day of November, 2000.

BY: Keith Takata

Keith Takata
Director, Superfund Division
U.S. Environmental Protection Agency

STATEMENT OF WORK FOR LEVIATHAN MINE

Purpose: This Statement of Work provides the Respondent an outline for the production of a Site Management Plan, preparation of a phased Remedial Investigation /Feasibility Study (RI/FS) and identification and implementation of Early Response Actions at Leviathan Mine (the Site), as ordered in the Administrative Order For Early Response Actions and Remedial Investigation and Feasibility Study, U.S. EPA Region IX, Docket No. CERCLA 01-1 ("the Order").

Introduction: Four major contaminant sources are known to pose potential risk to human health or the environment at the Site through releases of untreated Acid Mine Drainage (AMD) to Leviathan and Aspen Creeks. These source areas include (1) adit and pit underdrain discharges, contained in evaporation ponds on the site; (2) channel underdrain; (3) the "Aspen" seeps; and (4) the "Delta" seeps. Based upon available data, these four generalized sources contribute the majority of contaminants of concern (COC) loading to surface water at the Site. Interception and treatment of these releases can be expected to substantially alter the nature and extent of the threats posed by the Site. After initial characterization of these releases, the Respondent shall initiate early response actions to address the known releases, as approved by US Environmental Protection Agency, Region 9 (EPA), and as further discussed in this Statement of Work. Concurrently with the Early Response Actions, the Respondent shall proceed with portions of a comprehensive RI/FS, as approved by EPA, to thoroughly document the effects of the actions and to investigate portions of the Site that are unlikely to be dependent on or altered by the Early Response Actions. EPA will determine the scope of subsequent phases of the RI/FS following implementation of Early Response Actions and assessment of monitoring data.

Definitions: The terms used in this SOW shall have the meaning assigned to them in Section VI of the Order, unless otherwise expressly provided herein.

Coordinated Investigations: The Respondent shall submit a Leviathan Mine Site Management Plan ("SMP") as a project management tool that among other things provides the rationale for prioritization of response actions and presents a schedule for implementation of response actions for the Leviathan Mine site. EPA will accept or modify the SMP. The SMP shall propose an approach for gathering and assessing existing data, addressing data needs for Early Response Actions, and evaluating appropriate Early Response Actions to respond to known risks to human health and the environment in the short term. The SMP shall also address the development of Work Plans for Early Response Actions and for the phased RI/FS, including a plan for conducting an evaluation of the effect of the Early Response Actions on site conditions. The Respondent shall update the SMP at least once per year or at appropriate shorter intervals as determined by EPA.

The Respondent shall submit a phased RI/FS Work Plan and shall implement initial phases of the RI/FS Work Plan upon EPA approval. EPA will direct the Respondent to develop and implement the final phases of the RI/FS for Leviathan Mine after an adequate period for assessing the effect of Early Response Actions. A draft Scope of Work outline for a Leviathan Mine RI/FS is attached to assist in identifying portions of the work appropriate for early implementation. As part of the initial phase of the RI/FS, the Respondent shall compile and assess existing data to facilitate design of Early Response Actions and subsequent phases of the RI/FS. The RI/FS Work Plan shall provide for responding to shortcomings identified in the existing data. The data management system implemented for existing data shall be used to manage data collected through all ongoing information collection efforts at the site. The Respondent shall also include a Risk Assessment (human health and ecological) for the East Fork of the Carson River as an early phase of the RI/FS to be implemented in parallel with Early Response Actions. Early Response Actions are not expected to have a substantial short-term effect on the East Fork since Lahontan Regional Water Quality Control Board (LRWQCB) actions in the past 15 years have reduced catastrophic releases to the Carson River.

Early Response Actions: The Respondent shall submit proposals for Early Response Actions (such as Time Critical Removal Actions [TCRA], Non-Time Critical Removal Actions [NTCRA] and Interim Remedial Actions) to investigate and respond to the known risks from the untreated source areas, consistent with EPA's Memorandum on Use of Non-Time-Critical Removal Authority in Superfund Response Actions (Stephen Luftig and Barry Breen, February 14, 2000.). EPA will review the submitted proposals and supporting documentation for Early Response Actions and will determine which of these three types of Early Response Actions will be taken to address specific releases. The approach of implementing Early Response Actions in parallel with a phased Remedial Investigation/ Feasibility Study (RI/FS) for selection of Long Term Remediation is appropriate for this site because of the amount of existing data relating to known risks at the Site, the potential to address many if not all of these risks through Early Response Actions, and the need to obtain accurate information relating to any remaining sources of contamination at the Site once such Early Response Actions have addressed known sources.

The Respondent shall implement each TCRA or NTCRA upon completion of an EPA Removal Action Memorandum.

The Respondent shall prepare an Engineering Evaluation/Cost Analysis (EE/CA) for each NTCRA in accordance with U.S. EPA's Guidance on conducting NTCRA's under CERCLA. (See NTCRA Guidance, OSWER Directive No. 93650.0-32, August 6, 1993.) The EE/CA shall identify the objectives of removal actions and analyze the various alternatives that may be used to satisfy these objectives for cost, effectiveness, and implementability (NTCRA Guidance at 6).

If EPA determines that an Interim Remedial Action is the appropriate mechanism, the Respondent shall complete a focused RI/FS and implement the action selected by EPA in an Interim Record of Decision. A single EE/CA or focused RI/FS may be sufficient for related Early Response Actions.

For either Interim Remedial Action, TCRA or NTCRA, an appropriate level of public participation will be conducted by EPA. Early Response Actions will be communicated to the public through Fact Sheets, mailings, press releases and informational meetings as appropriate, in consideration of National Contingency Plan public participation requirements. The Respondent shall support the public participation effort through preparation of technical presentation material or attendance at informational meetings as required by EPA.

The Respondent shall submit a copy of the SMP and each proposal for an Early Response Action to the LRWQCB and to the U.S. Forest Service project manager to facilitate coordination of effort and site access issues.

Ongoing Response Action, Monitoring, Data Collection and Maintenance Activities: While the initial phases of the RI/FS and Early Response Actions are underway, certain activities essential to maintaining and monitoring the site will continue to be performed by LRWQCB: 1) the gathering of environmental data (meteorological measurements, surface water flow and water quality data), 2) revegetation, 3) site maintenance, and 4) activities to treat AMD in the Site's evaporation ponds. These efforts are incorporated into a separate administrative action with LRWQCB, and are mentioned in this SOW to ensure proper planning, coordination and data management.

Deliverables: In accordance with the above, the Respondent shall prepare and submit the following Plans to the EPA Remedial Project Manager (RPM). Pursuant to Section XVI of the Order, EPA may: (a) approve the submission; (b) approve the submission with modifications; (c) disapprove the submission and direct Respondent to resubmit the document after incorporating EPA's comments; or (d) disapprove the submission and assume responsibility for performing all or any part of the Work. The Respondent shall implement each Plan as approved by EPA.

1) Site Management Plan: The SMP shall include the following:

   a) A conceptual model of the Site;

   b) Identification of all tasks to be completed;

   c) A description of the Work Plan for a phased RI/FS, describing the objectives, prioritization and general approaches of each phase. The SMP shall explain how the approach to the RI/FS will achieve the long-term objectives for the site efficiently and thoroughly. The SMP shall discuss compiling and assessing existing data and implementing other initial RI/FS stages in parallel with Early Response Actions, as well as the development of the scope for final long-term RI/FS following implementation of Early Response Actions;

   d) A description of the Work Plans for Early Response Actions, describing the objectives, prioritization and general approaches of each Early Response Action. The SMP shall also describe how Early Response Actions will be coordinated with other actions and RI/FS activities, leading to a final long-term remedy;

e) A draft schedule for completion of all Early Response Actions at the Site other than response actions undertaken by LRWQCB under a separate administrative action.

2) Work Plan for First Phase RI/FS: The Work Plan shall include a schedule for implementation of the phased RI/FS. The First Phase RI/FS shall be incorporated into the final long-term response action RI/FS following implementation and assessment of the Early Response Actions. The Respondent shall implement the Work Plan as approved by EPA.

a) Assessment and Management of Existing Data: The Respondent shall compile and assess existing data, along with other monitoring data collected during implementation of the Early Response Actions, and shall gather the data into a central document and electronic data management system compatible with EPA data systems and GIS system (see attachment). The information gathered will be assessed for data quality, for potential data gaps needed for responding to the Site and for improvements in the conceptual model presented in the SMP.

b) Site Characterization: In the First Phase RI/FS, the Respondent shall characterize the Site, summarizing available data on the physical, demographic, and other characteristics of the Site and surrounding areas, including background engineering information for analysis of Early Response Action alternatives. Site characterization will include a site description and background, a description of all previous response actions at the Site, information characterizing the source, nature, and extent of contamination at the Site, and protocols for collection of groundwater and surface water data consistent with EPA protocols.

c) East Fork Carson Risk Assessment: The Respondent shall submit plans for a Risk Assessment (human health and ecological) for the East Fork of the Carson River as an early phase of the RI/FS to be implemented in parallel with Early Response Actions.

d) Streamlined Risk Evaluation: The Respondent shall submit a streamlined risk evaluation for the Site upstream of the East Fork Carson River, intermediate in scope between the limited risk evaluation undertaken for emergency removal actions and the conventional baseline assessment normally conducted for remedial action. Site sampling data for various media will be reviewed to identify Contaminants of Concern, and provide an estimate of how and to what extent people or ecological receptors may be exposed to these COC. The risk evaluation may also be utilized as a tool to define appropriate interim treatment levels.

e) QA/QC Plan, Sampling and Analysis Plan: The Work Plan shall ensure that any needed investigations at the Site are consistent with an EPA-approved Quality Assurance/Quality Control Plan and of sufficient technical quality to support the Human Health and Ecological Risk Assessments and/or the development and evaluation of the response action during the Feasibility Study. The Respondent shall conduct all sampling and analysis in accordance with an EPA-approved

Sampling and Analysis Plan. The Respondent shall document all sampling locations in a log and identify the locations on detailed maps of appropriate scale.

3) Work Plan for implementation of Early Response Actions

a) Early Response Action Scope, Goals, and Objectives: The Respondent shall identify the scope, goals, and objectives of Early Response Actions and shall develop an implementation schedule. The schedule shall include both the start and completion time for the Early Response Actions, ensuring completion of Early Response Actions within a time frame consistent with protection of human health and the environment at the Site. The Respondent shall collect, compile and report data relevant to the effectiveness, reliability, and cost of the Early Response Action in accordance with QA/QC procedures approved by EPA.

b) Identification and Analysis of Early Response Action Alternatives: Consistent with the provisions of relevant EPA Guidances relating to sites where risks to human health and the environment are reasonably well known, The Respondent shall conduct an analysis on two or three appropriate alternatives, using existing information on the nature and extent of contamination and risks. Once EPA has determined the specific type of Early Response Action (TCRA, NTCRA or Interim Remedial Action), the Respondent shall proceed with the appropriate level of planning and alternative analysis such as Time Critical Removal Work Plan, Non-Time Critical Engineering Evaluation and Cost Analysis or Focused RI/FS for an Interim Remedial Action. The planning documents shall include a schedule for implementation of the Early Response Action alternatives. Field experimentation and treatability studies relating to the potential alternatives may be incorporated as part of the Early Response Actions, including screening and oversight of bench-scale and pilot-scale treatability studies conducted by vendors.

c) Early Response Action Schedule and Operation: The Early Response Action Work Plans shall include project schedules, effluent criteria, plans for solids handling and disposal, monitoring and reporting requirements, and a Health and Safety plan. Successful Early Response Actions may be continued for several years with modifications for improved operation, and the Work Plan shall be modified accordingly. The Work Plan shall also provide for development of a written Operations and Maintenance Plan to be implemented to reduce risks to acceptable levels.

e) QA/QC Plan, Sampling and Analysis Plan: The Work Plan shall ensure that any needed investigations at the Site are consistent with an EPA-approved Quality Assurance/Quality Control Plan and of sufficient technical quality to support the development and evaluation of the response action during the Feasibility Study. The Respondent shall conduct all sampling and analysis in accordance with an EPA-approved Sampling and Analysis Plan. The Respondent shall document all sampling locations and times in a log and identify the locations on detailed maps of appropriate scale.

4) Work Plan for Long-term Response RI/FS:

Following implementation of the Early Response Actions at the Site, the Respondent shall submit a Work Plan for completion of an RI/FS for Long-term Response and shall implement the Work Plan as approved by EPA. The Work Plan shall propose methodology for identifying and quantifying any remaining sources of contamination at the Site. The Work Plan shall propose investigations necessary to further define site conditions, as altered by implementation of the evaporation pond water treatment and Early Response Actions at the Site. The Work Plan shall also propose investigation of conditions at the Site where such activities are considered by EPA to be necessary to protect human health or the environment. The Work Plan shall reference and build upon the initial phases of the RI/FS and ongoing data collection and monitoring activities, including data collected by the weather station at the Site and on-going surface and ground water monitoring. The following specific requirements are applicable to the RI/FS Work Plan.

a) QA/QC Plan: The Work Plan shall ensure that any needed investigations at the Site are consistent with an EPA-approved Quality Assurance/Quality Control Plan and of sufficient technical quality to support the development and evaluation of the remedial action alternative or alternatives during the Feasibility Study. The Respondent shall conduct all sampling and analysis in accordance with an EPA-approved Sampling and Analysis Plan. The Respondent shall document all sampling locations in a log and identify the locations on detailed maps of appropriate scale.

b) Site Characterization: Where existing data is not sufficient to fully characterize risks at the Site, the Work Plan shall provide for activities to supplement and verify existing information on the environmental setting and potential contaminant migration pathways at the Site. This shall include, but not be limited to, characterization of the hydrogeology, soils, surface water and sediments at the Site.

c) Source and Contaminant Characterization: Where needed to fill gaps in existing data, the Work Plan shall also provide for activities to characterize sources of contamination at the Site, including (1) disposal or release area characteristics (location and distribution of waste types, design features, operating practices, period of operation, age of area, and general physical conditions); and (2) waste characteristics, including the type, quantity and chemical composition of wastes placed in the area, physical and chemical characteristics of the waste, migration and dispersal characteristics of the waste, and biological effects of the waste on revegetation efforts and contaminant uptake potential. The Work Plan shall also provide for the gathering of supplemental data, where necessary, relating to contamination characteristics including ground water, soil, and surface water contamination, seasonal and annual mass transport of COC, and estimates of overall quantity of wastes and contaminants released over time.

d) Risk Assessment: The Work Plan shall provide for conducting a human health Risk Assessment and an ecological risk assessment in accordance with EPA's Risk Assessment Guidance for Superfund, Human Health Evaluation Manual (Interim Final, December, 1989, EPA 540-1-89-002), EPA's Risk Assessment Guidance for Superfund Part D: Standard Planning, Reporting, and Review of Superfund Risk Assessments and with EPA's Ecological Risk Assessment Guidance for Superfund (Interim Final) OSWER Directive No. 9285.7-25 (June 5, 1997) and other applicable EPA guidance. The attached draft Scope of Work outline for a Leviathan Mine RI/FS provides more specific details for conducting risk assessments. The Work Plan shall base risk assessment and risk management decisions upon available data conforming to EPA data quality requirements, including data reflecting changes in site conditions brought about by the Early Response Actions specified above.

e) Feasibility Study: The Work Plan shall outline the conduct of a Feasibility Study for long term remediation, including preparation of a Feasibility Study Report. The Feasibility Study shall review the effectiveness of Early Response Actions toward attainment of remedial action goals and objectives for the Site, and assess the feasibility and effectiveness of implementing alternative, further response actions. It shall include: (1) detailed identification of contamination to be remediated and physical hazards to be removed; (2) identification of remedial action alternatives needed to protect human health and the environment by eliminating, reducing, or otherwise controlling risks posed through each exposure pathway and migration route; (3) an evaluation of any remedial alternatives based upon (a) overall protection of human health and the environment, (b) compliance with all applicable or relevant and appropriate federal, state and tribal laws and regulations, (c) long term effectiveness and permanence, (d) reduction of the toxicity, mobility, or volume of contaminants through treatment, (e) short-term effectiveness, (f) implementability, (h) cost, (i) state acceptance, and (j) community acceptance; (4) recommendations of a preferred remedial action plan for EPA approval; and (5) a schedule for implementation of a preferred remedial action plan if needed.

Leviathan Mine, Alpine County, California
DRAFT Statement of Work for Remedial Investigation/ Feasibility Study

The following outline is a draft Statement of Work for conducting a comprehensive Remedial Investigation and Feasibility Study (RI/FS) at Leviathan Mine, culminating in a final RI/FS report for selection of long-term remedial actions. This draft is intended to communicate issues to be considered prior to Early Response Actions and initial phases of the Leviathan RI/FS.

I. REMEDIAL INVESTIGATION

Conduct those investigations necessary to characterize the Leviathan Mine and actual or potential contaminant migration pathways (Environmental Setting and Pathway Characterization); define the source (Source Characterization); define the degree and extent of contamination (Contaminant Characterization); identify actual or potential receptors (Receptor Identification); and conduct an assessment of risks posed to actual or potential receptors (Risk Assessment). "Leviathan Mine", for the purposes of this Statement of Work, refers to the area within the Leviathan Mine property boundaries and adjacent areas outside the property boundary which have been disturbed by mining activities, such as mine tailings, excavations, landslides and runoff of surface water and groundwater. The Study Area for the Remedial Investigation shall include the areal extent of the Leviathan Mine, the groundwater, surface water and flood plain areas affected by contaminant migration, and all other areas necessary for an understanding of the actual or potential threats to human health or the environment from Leviathan Mine activities.

The investigations should result in data consistent with an EPA-approved Quality Assurance/ Quality Control Plan and of sufficient technical quality to support the development and evaluation of the remedial action alternative or alternatives during the Feasibility Study. All sampling and analysis shall be conducted in accordance with an EPA-approved Sampling and Analysis Plan. All sampling locations shall be documented in a log and identified on detailed maps of appropriate scale.

Data shall be provided to EPA in an electronic format compatible with EPA data management systems. Quarterly written progress reports submitted to EPA shall be augmented by more frequent communication (such as field visits, conferences, and/or teleconferences) during periods of increased field activity, sampling and construction.

Previous investigation work shall be incorporated into the Remedial Investigation as appropriate. The Remedial Investigation shall augment and coordinate with past and ongoing information gathering efforts to provide consistent and comparable long-term information. For example, stream sampling locations should be consistent with previous water quality and flow measurement locations.

This outline presents a general list of scope items and may require modifications as the program proceeds.

A. Environmental Setting and Pathway Characterization

Collect information to supplement and verify existing information on the environmental setting and potential contaminant migration pathways in the Study Area. The investigation shall characterize the following:

1. Hydrogeology

Conduct a program to evaluate hydrogeologic conditions in the Study Area. This program shall provide the following information, as appropriate:

a. A description of the regional and local geologic and hydrogeologic characteristics affecting ground water flow beneath the Leviathan Mine, including:

i) Regional and local stratigraphy;

ii) Structural geology;

iii) Depositional history;

iv) Identification and characterization of areas and amounts of recharge and discharge;

v) Regional and local groundwater flow patterns;

vi) Characterization of seasonal variations in the groundwater flow regime;

vii) Ongoing collection of general meteorological data including, as applicable: daily precipitation and temperature records, annual and monthly precipitation averages, monthly temperature averages, wind speed and direction, evaporation rates, and climatic extremes (including frequency of occurrence);

viii) Specific watershed characteristics.

b. An analysis of any topographic features that might influence the groundwater flow system.

c. Based on field data, tests, and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways (including saturated and unsaturated units), including, as appropriate:

i) Hydraulic conductivity, porosity, effective porosity, pore water velocity, and

Darcy velocity;

ii) Lithology, grain size, sorting, degree of cementation;

iii) An interpretation of the degree of interconnections between saturated zones;

d. Based on field studies and cores, structural geology and hydrogeological cross sections and fence diagrams showing the extent (depth, thickness, lateral extent) of hydrogeological units which may be part of the migration pathways identifying, as appropriate:

i) Sand and gravel layers in unconsolidated deposits;

ii) Zones of fracturing or channeling in consolidated or unconsolidated deposits;

iii) Zones of higher permeability or lower permeability that might direct and restrict the flow of contaminants;

iv) Geologic formation or group of formations that are capable of yielding a significant amount of groundwater to wells and springs;

v) Water bearing zones that may serve as a pathway for contaminant migration including perched zones of saturation.

e. Based on data obtained from groundwater monitoring wells and/or piezometers installed upgradient and downgradient from the potential contaminant sources, a representative description of water level or fluid pressure monitoring including, as appropriate:

i) Water level contour and/or potentiometric maps (displayed legibly, superimposed on maps of appropriate scale);

ii) Hydrologic cross sections showing vertical gradients;

iii) The flow system including the vertical and horizontal components of flow;

iv) Any seasonal or temporal changes in hydraulic gradients.

f. A description of manmade influences that may affect the hydrogeology in the vicinity of the Leviathan Mine including pipelines, drains, ditches and altered channels, seals, compacted fill, mine shafts and adits, tunnels and galleries.

2. Soils

Conduct a program to characterize the soil and rock units above the water table in the vicinity of the Leviathan Mine. Such characterization shall include, as appropriate, but not be limited to, the following information:

a. SCS soil classification, including soil types in adjacent undisturbed lands;
b. Surface soil distribution;
c. Hydraulic conductivity (saturated and unsaturated);
d. Bulk density;
e. Porosity;
f. Soil pH;
g. Particle size distribution;
h. Moisture content, specific capacity, infiltration rate;
i. Soil stratification effect on unsaturated flow;
j. Acid generation potential.

3. Surface Water and Sediment

Conduct a program to characterize the surface water bodies in the Study Area. Appropriate streams and rivers to be characterized include those upstream of the Leviathan Mine, water bodies on or near the Leviathan Mine, the drainage immediately downstream of the Leviathan Mine, the affected stream/river system (Leviathan Creek, Bryant Creek, East Fork Carson River) at appropriate intervals and total distance to characterize the downstream impact, tributary streams to the affected streams above the confluence with the affected stream/river, and reference streams in the vicinity of the Study Area with comparable flow patterns, altitude, and watershed characteristics (such as geologic parent materials). The surface water and sediment characterization program shall include, as appropriate, but not be limited to the following activities and information:

a. Description of the water bodies including:

   i) For streams and rivers: location, elevation, flow, velocity, depth, width, seasonal fluctuations, and flooding tendencies (i.e. 10, 50, 100 and 500 year flood events, as appropriate);

   ii) Drainage patterns;

   iii) Production of a hydrograph sufficient for relating streamflow to precipitation and snowmelt patterns.

b. Installation, calibration and maintenance of stream gages at locations in the watershed sufficient for monitoring flow rates for use in stream hydrology and contaminant mass transport assessment;

c. Description of the chemistry of the natural surface water and sediments. This includes determining, as appropriate, the pH, total dissolved solids, total suspended solids, BOD, COD, alkalinity, conductivity, dissolved oxygen profiles, nutrients, total organic carbon, specific contaminant concentrations including federal priority pollutants, etc.

d. Description of the sediment characteristics including:

i) Deposition area (including distance downstream and flood plain/bank deposition);

ii) Thickness profile;

iii) Physical and chemical parameters including grain size, density, organic carbon content, pH, contaminant concentration such as metals and arsenic.

iv) Contaminant mobility, bioavailability, transport potential and acid generation potential for in-stream sediment and flood plain deposits.

B. Source Characterization

Collect analytical data to completely characterize and designate the wastes and areas where wastes have been placed, collected or removed including: type; quantity; physical form; disposition; and other characteristics affecting release. This shall include quantification of the following specific characteristics at each source area:

1. Disposal or release area characteristics including: location and distribution of waste types, design features, operating practices, period of operation, age of area, and general physical conditions. At a minimum, it is expected that a differentiation will be made between waste deposited on the Aspen Creek drainage and that in the Leviathan Creek area.

2. Waste characteristics

a. Type, quantity and chemical composition of wastes placed in the area, including degradation and reaction byproducts;

b. Physical and chemical characteristics of the waste;

c. Migration and dispersal characteristics of the waste including: sorption, biodegradability, hydrolysis rates and chemical transformations;

d. Biological effects of the waste on revegetation efforts and contaminant uptake

potential.

C. Contamination Characterization

Collect analytical data, as appropriate, on background conditions and contamination in groundwater, soils, surface water, and sediment, in the Study Area. This data shall be sufficient to define the extent, origin, direction, and rate of movement of contaminants. Data shall include time and location of sampling, media sampled, concentrations found, conditions during sampling, and the identity of the individuals performing the sampling and analysis. Address the following types of contamination in the Study Area:

1. Groundwater contamination including: the horizontal and vertical extent of groundwater contamination, direction of hazardous substance (contaminant) movement, velocity of contaminant movement, horizontal and vertical concentration of the indicator parameters of all possible hazardous and dangerous waste constituents, identification and characterization of discharge pathways from groundwater to surface water, evaluation of factors affecting contaminant movement, and extrapolation of future contaminant movement.

2. Soil contamination including: vertical and horizontal extent of contamination, contaminant concentrations, velocity and direction of contaminant movement, and a description of the contaminant and soil chemical properties and interaction.

3. Surface water and sediment contamination including: the horizontal and vertical extent of contamination, direction of contaminant movement, velocity of contaminant movement, horizontal and vertical concentration contaminants, evaluation of factors affecting contaminant movement, description of the chemistry of the contaminant and surface water or sediment properties and interaction, and extrapolation of future contaminant movement and fate through modeling.

4. Seasonal and annual mass transport of contaminants of concern, including: total flux (dissolved and suspended/resuspended materials) from the Leviathan Mine, mass flux from identifiable source areas still contributing to the stream contamination, hydrological and other factors contributing to patterns of streambed precipitation and resuspension, and incorporation of these factors in the model of contaminant movement and fate mentioned in the previous paragraph.

5. Estimate of overall quantity of wastes and contaminants released over time.

D. Receptor Identification and Risk Assessments

1. Human Health Risk Assessment

Perform a human health baseline risk assessment in accordance with EPA's Risk Assessment Guidance for Superfund, Human Health Evaluation Manual (Interim Final, December, 1989, EPA 540-1-89-002) and with EPA's Risk Assessment Guidance for Superfund Part D: Standard Planning, Reporting, and Review of Superfund Risk Assessments (currently without an EPA document number, but available on the EPA homepage at http://www.epa.gov). In addition, the human health risk assessment should utilize the US EPA Region 9 Preliminary Remediation Goals (PRGs) (available on the Region 9 homepage at http://www.epa.gov/region9/ or by faxing Dr. Stan Smucker at 415-744-1916). The risk assessment should also make use of an EPA document now in public review, Community Participation in Superfund Risk Assessments Supplement to RAGS (available by faxing Dr. Sophia Serda at 415-744-1916). The work plans, Study Area conceptual model, list of contaminants of concern, list of potential receptors and sensitive populations, and all other components of the risk assessment should be approved by EPA in a phased approach. It is particularly critical that all field sampling plans for data to be used for human health risk assessment be approved by EPA prior to any mobilization in the field. The study will include a program to identify the potential exposure pathways in the surface waters, sediment and soils characterized above and in terrestrial areas potentially impacted by run-off or sediment transport from the Leviathan Mine. Specific Washoe Tribal cultural uses of the resources affected by the mine and local resource use patterns will be incorporated into the assessment as appropriate. The program shall include:

a. Gather and analyze relevant data and data quality from the Study Area;

b. Identify potential chemicals of concern and bioavailable chemical species;

c. Collect qualitative and quantitative toxicity information for the chemicals of concern and specific species of the chemicals, particularly bioavailable forms;

d. Determine appropriate toxicity values;

e. Identify potential exposure pathways and exposed populations;

f. Estimate exposure concentrations and contaminant intakes for pathways;

g. Characterize potential for adverse health effects (cancer risks and non-cancer hazard quotients);

h. Evaluate uncertainty.

2. Ecological Risk Assessment

Perform an ecological risk assessment according to the Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (Interim Final, June 1997, EPA 540-R-97-006). The work plans, Study Area conceptual model, list of contaminants of ecological concern and bioavailable forms of the chemicals, list of ecological receptors, and all other components of the ecological risk assessment should be approved by EPA in a phased approach. It is particularly critical that all field sampling plans be approved by EPA prior to any mobilization in the field. The ecological study will include a program to identify the potential biological receptors (including benthic and aquatic fauna and plants) in the surface waters characterized above (upstream of the Leviathan Mine, in the affected stream, in tributary streams and in appropriate reference streams including Mountaineer/Poison Creeks) and in terrestrial areas potentially impacted by run-off from the Leviathan Mine. The program shall include:

a. Identification of the species present, including species identified as threatened or endangered by Federal or State agencies, and of critical habitats such as wetlands;

b. Estimate of population of all threatened and endangered species;

c. Selection of ecological receptors;

d. Selection of assessment and measurement endpoints.

E. Geotechnical Engineering Evaluation

Conduct a geotechnical engineering assessment to evaluate the stability of existing impoundment berms and tailings pile slopes particularly during potential seismic events. The assessment will include the following tasks:

1. Review of groundwater level data collected from groundwater monitoring wells in the vicinity of the Leviathan Mine.

2. Completion of seismic refraction lines across the tailings piles and adjacent areas in an attempt to determine the stratigraphy and relative density of subsurface materials.

3. Visual assessment of the existing structures to evaluate whether the material is competent and of appropriate size.

4. Completion of subsurface explorations to characterize the native materials beneath the tailings piles.

5. Assessment of mine shafts, adits, tunnels and galleries to determine their interaction and connection with other structures.

6. Geotechnical assessment of the existing evaporation pond berms for structural integrity as well as an assessment of the potential for increasing pond capacity through raising the level of the outflow pipe. Consideration should be made of the height and competency of the impermeable liners and the effect of potential wave action.

7. Geotechnical assessment of waste rock slopes for stability and safety.

II. FEASIBILITY STUDY

Conduct a Feasibility Study and prepare a Feasibility Study Report.

The feasibility study will serve to evaluate the feasibility and effectiveness of implementing alternative remedial actions. It shall include:

A. Detailed identification of contamination to be remediated and physical hazards to be removed;

B. Identification of remedial action alternatives that will protect human health and the environment by eliminating, reducing, or otherwise controlling risks posed though each exposure pathway and migration route. The number and types of alternatives to be evaluated shall take into account the characteristics and complexity of the facility. A phased approach for evaluation of alternatives may be required for certain facilities, including an initial screening of alternatives to reduce the number of potential remedies for the final detailed evaluation. The final evaluation of remedial action alternatives that pass the initial screening shall be evaluated for compliance with the requirements in (40 CFR 300.430[e][9]). The Feasibility Study should specifically evaluate the potential damage to the ecological receptors of each remedial alternative for contaminants in water, sediment and surface soils as the final task of the ecological risk assessment.

   Specifically each alternative must be assessed for:

   1. Overall protection of human health and the environment;

   2. Compliance with all applicable or relevant and appropriate federal, state and tribal laws and regulations;

   3. Long term effectiveness and permanence;

   4. Reduction of the toxicity, mobility, or volume through treatment;

   5. Short-term effectiveness;

6. Implementability
7. Cost;
8. State acceptance;
9. Community acceptance.

C. An evaluation of alternatives based on the nine criteria specified above;

D. Recommendation of a preferred remedial action plan for EPA approval;

E. Schedule for implementation of a preferred remedial action plan.

ENVIRONMENTAL PROTECTION AGENCY
REGION 9
GEOGRAPHIC INFORMATION SYSTEMS CENTER

1.0 INTRODUCTION

1.1 ORGANIZATION

The Environmental Protection Agency (EPA) is tasked with the responsibility of improving and preserving the quality of the environment, both national and global. This includes the protection of human health and the productivity of natural resources on which all human activity depends. The Agency is tasked to implement and enforce Federal environmental laws, to implement U.S. policy, both foreign and domestic, which fosters the integration of economic development and environment protection so that economic growth can be sustained over the long term, to take steps to reduce environmental risk, to educate the public on environmental issues, conservation, and prevention, and to participate in public and private decisions affecting energy, transportation, agriculture, industry, international trade, and natural resources in order to ensure fully integrated consideration of environmental quality issues.

1.2 BACKGROUND

EPA Region 9, Policy and Management Division, Computer Systems, LAN, and Telecommunications Program is responsible for providing a wide range of ADP support services to personnel within Region 9 at 75 Hawthorne St., San Francisco.

1.3 ADP/TELECOMMUNICATIONS ENVIRONMENT

1.3.1 HARDWARE

Local personal computers could be of many varieties, such as DELL, NEC, and others running WINDOWS 95/NT, including laptops. Local Unix workstations include Data General Aviion and Sun Ultra 1 & 2 models. Other on-site hardware peripherals include color laser, thermal wax and inkjet (HP 750C) printers, digitizer and could include many diverse and unique pieces, such as scanners, modems, CD/ROMS, tape backup, etc.. Additional computers may be acquired to replace existing equipment or to upgrade systems.

1.3.2 SOFTWARE

The GIS Center is proficient with the following products:

Adobe Illustrator
Adobe Photoshop
Corel Draw
Corel WordPerfect
ERDAS Imagine
ESRI ArcInfo
ESRI Arc Macro Language (AML)
ESRI ArcView
ESRI Avenue
ESRI Map Objects
ESRI Spatial Database Engine (SDE)
HTML Editor (not specific, see Section 2.1.12)
Lotus 123
Lotus Freelance
Lotus Notes
Microsoft Access
Microsoft Project
Microsoft Visual Basic
Microsoft Windows
Oracle 8
Oracle Developer and Designer
SAS
Trimble Pathfinder Office

The work will be in a DOS, UNIX, and Windows95/NT environment. The principal operating systems are: UNIX Solaris, MS-DOS, and Novell Netware Version 4 & 5.

Software programs are designed to meet the diverse output requirements of a multimedia information management environment. Listed software are used to facilitate the use of information technology within EPA in support of the Agency's mission to improve and preserve the quality of the environment.

1.3.3 NETWORKING

The Ethernet used in the GIS Center connects Data General, Sun Microsystems, and WindowsNT servers and workstations. The above identified software systems, and many system data bases, are resident in the servers and provided to users through this network and the Novell Local Area Network which distributes PC-based software throughout the office. Additional communications software

includes standard Novell network software, Lotus Notes Mail, and telnet/ftp communications with remote systems.

2.0 TECHNICAL SERVICES

2.1 TASK DESCRIPTION

This GIS Center task focus is GIS, GPS, and internet services. The following sections describe work routinely undertaken by the GIS Center AND performance standards that should be adhered to while undertaking these tasks.

2.1.1 GIS SCIENTIFIC APPLICATIONS

Through the utilization of GIS software in UNIX and PC-Windows95/NT environments, the GIS Center provides the following support:
Review utilities, applications, and a wide range of environmental data obtained from within and outside of EPA Region 9 (states, other federal agencies, EPA offices, private industry, etc.) to determine the applicability to the EPA Region 9 GIS environment. Research potential data sources. If applicable, acquire and integrate into the existing baseline of utilities, data layers, databases and applications. Perform quality assurance (QA) on all data.

Develop and implement GIS applications and projects in support of Region 9 programs.

Provide technical recommendations on applications development procedures and cartographic conventions.

Document in writing GIS projects, applications and data layers to include requirements definition, definition of data layers and user procedures.

2.1.2 SPATIAL ANALYSIS OF DATA

Spatial analysis is a process used to assist in decision making or answering complex geographic (spatial) problems. Spatial analysis for EPA Region 9 may involve environmental, business, social, hydrologic, agricultural, and other application areas, using ArcView Spatial Analyst, ArcInfo and Arc Grid software and may use other high-end statistical software such as SAS or other acquired software.

2.1.3 CREATION OF METADATA

Circular No. A-16 describes the responsibilities of Federal agencies with respect to coordination of Federal surveying, mapping, and related spatial data activities. This Circular promotes the coordinated use, sharing, and dissemination of geospatial data. Metadata products shall be delivered to EPA in accordance to the standards put forth by the Federal Geographic Data Committee (www.fgdc.gov).

2.1.4 WEB DEVELOPMENT

The internet is used by the EPA Region 9 to share and distribute data, maps, and information relevant to EPA's mission. Products intended for the internet shall be delivered to EPA in accordance to the standards and guidelines found in the EPA Webguide (www.epa.gov/webguide).

3.0 POINTS OF CONTACT

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415-744-1803

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

November 22, 2000

Sandra M. Stash
ARCO Environmental Remediation, L.L.C.
307 E. Park Street
Anaconda, Montana 59711

Re: Leviathan Mine Site
Administrative Order for Early Response Actions,
Remedial Investigation and Feasibility Study
Docket No. 2001-09-05

Dear Ms. Stash:

Enclosed please find an Administrative Order for Early Response Actions, Remedial Investigation and Feasibility Study, which is binding upon Atlantic Richfield Company ("ARCO" or "Respondent") and its successors. Also enclosed are the Statement of Work and attachments thereto.

Pursuant to our discussions, we anticipate that ARCO Environmental Remediation, L.L.C. ("AERL") will act as ARCO's implementing agent in this matter. EPA appreciates AERL's thoughtful contributions to the development of the Statement of Work and the cooperative approach AERL has taken at Leviathan Mine. The Order requires Respondent to provide EPA's Remedial Project Manager, Kevin Mayer, written notice not later than 10 days after the effective date of this Order, stating whether it will comply with the terms of this Order. Given our collaboration in the development of the Statement of Work, we look forward to receiving such notice promptly. Respondent may, within 10 days after the date this Order is signed, request a conference with EPA's Superfund Division Branch Chief to discuss issues involving the implementation of the response actions required by the Order and the extent to which Respondent intends to comply with this Order. If requested, the conference shall occur on December 14, 2000 at 75 Hawthorne Street, San Francisco, California.

Sincerely,

Keith Takata

Keith Takata
Director, Superfund Division

Cc: Jean A. Martin
ARCO Law
444 South Flower Street, 35th Floor
Los Angeles, California 90071